# Contents of Vol. 29

Program ..... ix

Lake Arrowhead Workshop Special Issue Papers—Introduction ..... 1

*Plenary Sessions* ..... 9

Recent advances in the mathematical theory of steady flow of viscoelastic fluids
M. Renardy (Blacksburg, VA, U.S.A.) ..... 11

The behavior of complex fluids at solid boundaries
W.R. Schowalter (Princeton, NJ, U.S.A.) ..... 25

Do we understand the physics in the constitutive equation?
J.M. Rallison and E.J. Hinch (Cambridge, England) ..... 37

*Contributed Papers* ..... 57

Numerical simulation and change in type in the developing flow of a nonlinear viscoelastic fluid
R.E. Gaidos (Midland, MI, U.S.A.) and R. Darby (College Station, TX, U.S.A.) ..... 59

The vortex growth of a K.B.K.Z. fluid in an abrupt contraction
S. Dupont and M.J. Crochet (Louvain-la-Neuve, Belgium) ..... 81

Mathematical and physical requirements for successful computations with viscoelastic fluid models
J. van der Zanden and M. Hulsen (Delft, The Netherlands) ..... 93

Numerical simulation of highly viscoelastic flows through an abrupt contraction
B. Debbaut, J.M. Marchal and M.J. Crochet (Louvain-la-Neuve, Belgium) ..... 119

Numerically stable finite element techniques for viscoelastic calculations in smooth and singular geometries
R.C. King, M.R. Apelian, R.C. Armstrong and R.A. Brown (Cambridge, MA, U.S.A.) ..... 147

Finite element Eulerain–Lagrangian method for time dependent flow of multimode fluids
J.A. Serdakowski and B. Caswell (Providence, RI, U.S.A.) ..... 217

Flow visualization and birefringence studies on planar entry flow behavior of polymer melts
S.A. White (Madison, WI, U.S.A.) and D.G. Baird (Blacksburg, VA, U.S.A.) ..... 245

Reentrant corner singularities in non-Newtonian flow. Part I. Theory
A.R. Davies (Aberystwyth, Wales, United Kingdom) ..... 269

Further results on the flow of a Maxwell fluid through an abrupt contraction
J.R. Rosenberg (Berkeley, CA, U.S.A.) and R. Keunings (Louvain-la-Neuve, Belgium) ..... 295

Spurt phenomena of the Johnson–Segalman fluid and related models
R.W. Kolkka (Houghton, MI, U.S.A.), D.S. Malkus (Madison, WI, U.S.A.), M.G. Hansen, G.R. Ierley and R.A. Worthing (Houghton, MI, U.S.A.) ..... 303

Singular behavior of power-law fluids in Hele Shaw flow
O. Hassager (Lyngby, Denmark) and T.L. Lauridsen (Brøndby, Denmark) ..... 337

Numerical simulation of the planar contraction flow of a Giesekus fluid
Hae Cheon Choi, Jin Ho Song and Jung Yul Yoo (Seoul, Korea) ..... 347

Creeping flow of dilute polymer solutions past cyclinders and spheres
M.D. Chilcott and J.M. Rallison (Cambridge, England) ..... 381

Modelling of Boger fluid jets using the Oldroyd-B equation—A comparison of experimental and numerical results
M.S. Chai and Y.L. Yeow (Victoria, Australia) ..... 433

Author Index Vol. 29 ..... 443